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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,394	01/10/2002	Hironori Ura	F-7260	7879

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EXAMINER	
HODGE, ROBERT W	

ART UNIT	PAPER NUMBER
1746	

DATE MAILED: 09/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/018,394	URA ET AL.	
	Examiner	Art Unit	
	Robert Hodge	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-14 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-5,12 and 14 is/are rejected.

7)☒ Claim(s) 6-11 and 13 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 10 January 2002 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 12-13-01
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Heat Dissipating Battery Pack".

Claim Objections

2. Claims 1 and 6 are objected to because of the following informalities: In the first claim line 10 the word --a-- should be used instead of "its" between the words "having" and "heating". In claim 6 line 18 the word --a-- should be used instead of "its" between the words "with" and "heating".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Dansui et al U.S. Patent no. 6,692,864 herein after referred to as Dansui et al.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Dansui et al teaches a battery pack with a plurality of cells stacked on top of each other (Abstract line 3) with wave-like heat-collecting plates between the cell stacks that contact the battery cells (column 3, lines 23-30). Specifically the heat-collecting plate 5 of figure 3 clearly has a wave-like form and is located between the tiers of the battery cells 1. Dansui et al. also teaches that a heat pipe is interdispersed in a groove in a heat-collecting plate (column 4, line 53), which can also be seen in figure 3 with heat-collecting plate 5 formed around heat pipe 6. Dansui et al. further teaches a case for containing the cells, heat-collecting plates and heat pipes (Abstract line 3), as well as a heat-dissipating member used to close an opening of the case (column 3 lines 41-50 and claims 1 and 17). Additionally as disclosed by Dansui et al., an external heat transfer unit is placed at the main body of a junction; it is inherent that such placement will close the opening of the case.

Dansui et al. teaches a concave shaped groove in the heat-dissipating member for contacting a heat pipe, as seen in figure 3, heat collecting plate 5 forms a concave groove around heat pipe 6. It is also shown in figure 3 that the heat collecting plate 5 and the heat pipe 6 come in contact with each other.

Dansui et al. teaches that the heat-dissipating member contacts the outermost cells in a close configuration (column 5, line 33). As disclosed by Dansui et al., the independent members are placed so as to contact each other tightly or, as claimed, are "sandwiched." This can also be seen in figure 3, where the heat-collecting plate 5 tightly contacts battery cells 1 with no gap at the contact surface.

Dansui et al also teaches that the heat collecting plate is located between an uppermost or lowermost tier of the cells (column 7 line 40). As disclosed by Dansui et al. a "heat collector is disposed around a first battery position at an inner side of said plurality of layers". This is also indicated in figure 3 where the heat-collecting plate 5 is shown between the uppermost and lowermost tiers of the battery cells 1.

Dansui et al. further teaches that a groove is formed in the heat collecting plate opposite of the other surface that contacts the cells, which is seen in figure 3 where the heat collecting plate 5 is shown having a groove around the battery cell 1 and that contact is made between them, similarly as shown in the current applications drawings figure 2 objects 4 and 7 and as claimed in claim 5.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dansui et al. in view of Sugiura et al.

Dansui et al. teaches the aforementioned limitations as stated in the above 102 rejection.

Dansui et al. does not teach the use of an elastic insulative member with thermal conductive and electric insulating properties used within the pack case.

Sugiura et al. teaches the use of an elastic material that has heat conductive and electrically insulating properties, provided on the inner surface of the case and can be used on the cells (column 3, lines 1-3, column 6, lines 66-67 and column 7 lines 1-5).

At the time of invention it would have been obvious to a person of ordinary skill in the art to apply the teachings of Sugiura et al. to modify Dansui et al. to include an elastic member with thermal conductive and electric insulating properties on the inner surface of the case or used between the cells. The suggestion for doing so is taught in the prior art of Sugiura et al. to more evenly distribute heat throughout the case to prevent the cells from failing at a faster rate, or to prevent the possibility of short circuits between terminals, which would in turn cause the entire battery pack to fail.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dansui et al. in view of Hilderbrand et al.

Dansui et al. teaches the aforementioned limitations as stated in the above 102 rejection as well as the use of a heat sink on the outside of the case for dissipating heat that is in contact with the heat pipe (abstract, figures 1-2, column 2 lines 19-20, and column 4, lines 18-19).

Dansui et al. does not teach the use of a resin-made pack case with lid plate.

Hilderbrand et al. teaches the use of a battery case made from a variety of materials including plastics and polymers (column 6, lines 37-43).

At the time of invention it would have been obvious to a person of ordinary skill in the art to apply the teachings of Hilderbrand to modify Dansui et al. to use a resin as the material of construction for the battery case and lid. Hilderbrand et al. disclose that the motivation for doing so would be to provide a durable outer shell to incase the cells that will protect the cells from impact whereby preventing the failure of the entire battery.

Allowable Subject Matter

7. Claims 6-11 & 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The Prior Art does not disclose a heat pipe being soldered to a heat collecting plate, that the heat collecting plate is a laminate sheet having adhesive properties on both sides, and the adhesive layer is used to bond the heat pipe and heat collecting plate together, that the heat pipe and heat dissipating portion are arranged perpendicular to each other forming an "L" shape, or that the heat pipe has parallely-arranged heating portions coupled to the heat dissipating portion and similarly that the heat collecting plate has parrallely-arranged fitting grooves for the heating portions. The Prior Art also does not disclose the use of any type of thermal grease used between the surface of a groove in the heat collecting plate or heat dissipating member and the heating portion of the heat pipe.

9. The Prior Art does not disclose specific dimensions used for determining the depth of the groove related to the outer diameter of the heat dissipating member, the radius of the arc-shaped groove bottom side being identical with the radius of said heat dissipating portion or that the width of the groove opening is made larger than an outer diameter of said heat dissipating portion.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. U.S. Patent No. 6,087,038 to Flament et al., teaches the use of arc shaped plates used to control the temperatures of cylindrically-shaped electrochemical cells

b. U.S. Patent No. 6,783,886 to Sakakibara et al, teaches a battery pack with a resin made case with radiator plates contained within in order to cool the cells enclosed in the battery pack

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Hodge whose telephone number is (571) 272-2097. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RWH 9-21-04

MICHAEL BARR
SUPERVISORY PATENT EXAMINER